CLAIMS

What is claimed is:

1. A projection system for projection of pixelized color images onto a display surface, the projection system comprising:

a light source;

a color modulator configured to modulate the spectral distribution of light and pass modulated light to the display surface; and

a reflective light modulator disposed to receive light from the light source and selectively reflect the light into a first optical path that includes the color modulator and a second optical path that bypasses the color modulator.

2. The projection system of claim 1 wherein the reflective light modulator includes a digital micro-mirror device.

3. The projection system of claim 1, wherein the reflective light modulator includes an array of mirror elements, each mirror element having a first deflected position wherein light is passed from the mirror element to the display surface to form a substantially white pixel on the display surface.

4. The projection system of claim 3, wherein each mirror element has a second deflected position wherein light is reflected from the mirror element to the color modulator.

5. The projection system of claim 3, wherein each mirror element has a neutral position wherein light is reflected from the mirror element to the color modulator.

6. The projection system of claim 1, wherein the color modulator is an interferometric based modulator.

7. The projection system of claim 1, wherein the color modulator includes an array of color pixel elements.

8. The projection system of claim 1, wherein the projection system defines two light paths between the reflective light modulator and the display surface including first and second light paths and wherein the first light path transmits light from the reflective light modulator to the display surface bypassing the color modulator.

9. The projection system of claim 1 further including a light trap and wherein the reflective light modulator is further configured to selectively reflect light toward the light trap.

10. A projection system for projection of pixelized color images onto a display surface, the projection system comprising:

a light source;

means for modulating the spectral distribution of light and pass modulated light toward the display surface; and

reflective means for receiving light from the light source and selectively directing the light between the means for modulating the spectral distribution and the display surface.

11. The projection system of claim 10 wherein the reflective means includes a reflective light modulator.

12. The projection system of claim 11 wherein the reflective light modulator includes a digital micro-mirror device.

13. The projection system of claim 10 further including optic means for intercepting light reflected towards the display surface from the means for modulating and the reflective means.

14. The projection system of claim 10 further including a light trap and wherein the reflective means further includes means for selectively reflecting light toward the light trap.

15. A method for projecting pixelized color images onto a display surface, the method comprising:

generating light,

selectively passing the generated light between an interferometric modulator and the display surface,

the interferometric modulator modulating the wavelength of light and passing the modulated light toward the display surface.

16. The method of claim 15 further including focusing the light passed towards the display surface.

17. The method of claim 15 further including identifying, for each pixel of the pixelized color image, a time the reflective light modulator is positioned to pass the light toward the interferometric modulator and toward the display surface.

18. A projection system for generating color images on a display surface, the projection system comprising:

a color modulator including an array of color pixel elements;

a light source;

viewing optics; and

a reflective light modulator disposed to receive light from the light source, the reflective light modulator having an array of mirror elements wherein each mirror element defines at least two light paths including a first light path wherein reflected light passes from the mirror element to the viewing optics, bypassing the color modulator and a second light path wherein reflected light passes from the light source to the color modulator before reaching the viewing optics.

19. The projection system of claim 18 wherein the color modulator is an interferometric modulator configured to alter the spectral distribution of light at each of the color pixel elements.

20. The projection system of claim 19 wherein the color modulator is configured to generate an intensity versus wavelength distribution that is peaked about a single wavelength.

21. The projection system of claim 19 wherein the color modulator is configured to alter the spectral distribution of incoming light by absorbing most of the incoming light.

22. The projection system of claim 18 further comprising an image processing unit, the image processing configured to determine a substantially white component of light and utilize the first light path to generate the substantially white component of light.

23. A method of generating an image during a frame period, the method comprising:

providing a projection system comprising a reflective light modulator having an array of mirror elements each receiving substantially white light from a light source, a color modulator having a plurality of color pixel elements, and a display surface;

selectively controlling the reflective light modulator to define a first path wherein mirror elements pass the substantially white light to the display surface without color modulation by the color modulator and to define a second path wherein mirror elements reflect the substantially white light to the color modulator that modulates the color of the light before reflecting the light of the second path to the display surface.

24. The method of claim 23 further comprising:

receiving image information defining color values for locations on the display surface;

determining a substantially white component of each color value;

utilizing the first path to define the substantially white component; and

if residuals of the color values remain, utilizing the second path to generate the residual of each color value.

25. The method of claim 23 wherein defining the first path includes angularly deflecting mirror elements to a first position and defining a second path includes angularly deflecting mirror elements to a second position.

26. The method of claim 23 wherein defining the first path includes angularly deflecting mirror elements to a first position and defining a second path includes releasing the mirror elements into a neutral position.

27. The method of claim 23 further comprising selectively controlling the reflective light modulator to define a third path wherein mirror elements pass the substantially white light to a light trap.